

**Texas Department of Transportation
Book 2 – Technical Provisions**

**US 77 UPGRADE FROM KINGSVILLE TO
DRISCOLL PROJECT**

**Attachment 2-2
Work Breakdown Structure Requirements**

Table 1 represents the minimum levels of the WBS that all schedule information shall rollup to once the Project Baseline Schedule is fully developed.

The WBS in general shall conform to level structure as follows or as otherwise approved by TxDOT:

Table 1: WBS Minimum Requirements

- 1 Project**
 - 1.1. Project Administration**
 - 1.1.1. Mobilization
 - 1.1.1.1. Developer
 - 1.1.2. Submittals and Permitting
 - 1.1.2.1. (By Governmental Agency)
 - 1.1.2.1.1. (By Specific Permit/Submittal Requirement)
 - 1.2. Utility Adjustments (for Each Segment)**
 - 1.2.1. Utility Coordination
 - 1.2.1.1. Administration and Planning
 - 1.2.1.1.1. Site Utility Engineering
 - 1.2.1.1.2. Conceptual Design
 - 1.2.1.2. (By Owner)
 - 1.2.1.2.1. Master Agreements
 - 1.2.1.2.2. Utility Assemblies
 - 1.2.2. Utility Relocations
 - 1.2.2.1. (By Owner)
 - 1.2.2.1.1. (By Line No.)
 - 1.3. Design (for Each Segment)**
 - 1.3.1. General Activities and Field Work
 - 1.3.1.1. Design Mobilization
 - 1.3.1.2. Schematics
 - 1.3.1.3. Survey Work
 - 1.3.1.4. Geotechnical Investigations
 - 1.3.1.5. Additional Field Investigations
 - 1.3.2. Develop Specifications
 - 1.3.2.1. (By Discipline)
 - 1.3.3. Geotechnical Design
 - 1.3.3.1. General
 - 1.3.3.2. Earthwork Geotech
 - 1.3.3.3. Bridge Geotech
 - 1.3.3.4. Culvert Geotech
 - 1.3.3.5. Wall Geotech
 - 1.3.3.6. Pavement Borings
 - 1.4. Design (Continued) (for Each Segment)**
 - 1.3.4. Pavement Design
 - 1.3.4.1. Data Analysis and Draft Report
 - 1.3.4.2. Final Design and Report
 - 1.3.5. Drainage Design

- 1.3.5.1. Hydrologic and Hydraulic Design
- 1.3.5.2. Preliminary System Design
- 1.3.5.3. Detailed Drainage Design
- 1.3.6. Roadway Design
 - 1.3.6.1. Alignments
 - 1.3.6.2. Earthwork
 - 1.3.6.3. Typical Sections
 - 1.3.6.4. Detailed Design
- 1.3.7. Bridge Design
 - 1.3.7.1. Establish Criteria and Procedures
 - 1.3.7.2. Bridge layouts
 - 1.3.7.3. Substructure Design
 - 1.3.7.4. Superstructure Design
- 1.3.8. Retaining Wall Design
 - 1.3.8.1. Establish Criteria and Procedures
 - 1.3.8.2. Fill Wall Design
 - 1.3.8.3. Cut Wall Design
- 1.3.9. Traffic Management
 - 1.3.9.1. Traffic Control Development (By Phase)
- 1.3.10. Environmental Design
 - 1.3.10.1. Erosion Control/SWPPP/EPIC
 - 1.3.10.2. Noise Wall Design
- 1.3.11. Landscape and Aesthetic Design
 - 1.3.11.1. Landscape Design
 - 1.3.11.2. Aesthetic Design
- 1.3.12. Electrical Design
 - 1.3.12.1. Illumination
 - 1.3.12.2. Traffic Signals
- 1.3.13. ITS Design
 - 1.3.13.1. Duct Bank System & Power Supply
 - 1.3.13.2. ITS Equipment & Structures
- 1.3.14. Signage and Marking Design
 - 1.3.14.1. Overhead Signs
 - 1.3.14.2. Small and Large Signs
 - 1.3.14.3. Pavement Markings
- 1.3.15. Design Packages
 - 1.3.15.1. Package Preparation
 - 1.3.15.2. QA/QC Review
 - 1.3.15.3. Submittal
 - 1.3.15.4. TxDOT Reviews
 - 1.3.15.5. Comment Resolution
- 1.4. Construction (for Each Segment)**
 - 1.4.1. General
 - 1.4.1.1. Mobilization
- 1.5. Construction (Continued) (for Each Segment)**
 - 1.4.1.2. Administration
 - 1.4.1.3. Quality Control
 - 1.4.2. By Work Areas – Frontage Roads, Mainlanes & Cross-Streets
 - 1.4.2.1. Removals
 - 1.4.2.1.1. Building Removals
 - 1.4.2.1.2. ROW Preparation

- 1.4.2.1.3. Roadway Removals
- 1.4.2.1.4. Bridge Removals
- 1.4.2.2. Earthwork
 - 1.4.2.2.1. Topsoil Stripping and Placing
 - 1.4.2.2.2. Excavation
 - 1.4.2.2.3. Embankment
 - 1.4.2.2.4. Special Geotechnical Measures
- 1.4.2.3. Landscaping
 - 1.4.2.3.1. Seeding and Sodding
 - 1.4.2.3.2. Fertilizer and Watering
 - 1.4.2.3.3. Special Aesthetic Landscaping
- 1.4.2.4. Subgrade Treatment and Base
 - 1.4.2.4.1. Lime Treatment or Other
 - 1.4.2.4.2. Flexible Base
- 1.4.2.5. Pavement
 - 1.4.2.5.1. Asphalt Pavement
 - 1.4.2.5.2. Concrete Pavement
 - 1.4.2.5.3. Curb & Gutter
 - 1.4.2.5.4. Driveways
 - 1.4.2.5.5. Sidewalks and Median Paving
- 1.4.2.6. Retaining Walls
 - 1.4.2.6.1. Permanent and Temporary (By Wall No.)
- 1.4.2.7. Bridges
 - 1.4.2.7.1. (By Bridge Name)
- 1.4.2.8. Drainage
 - 1.4.2.8.1. Culverts
 - 1.4.2.8.2. Storm Sewer
 - 1.4.2.8.3. Riprap
- 1.4.2.9. Traffic Control and Temporary Work
 - 1.4.2.9.1. Barricades, Signs & Traffic Handling
 - 1.4.2.9.2. Erosion Control
 - 1.4.2.9.3. Detour Construction/Removal
 - 1.4.2.9.4. Portable Traffic Barrier
 - 1.4.2.9.5. Workzone Pavement Marking
 - 1.4.2.9.6. Temporary Bridges/Shoo-Flys
 - 1.4.2.9.7. Temporary Walls/Shoring
 - 1.4.2.9.8. Temporary Drainage
- 1.4.2.10. Permanent Barriers
 - 1.4.2.10.1. Permanent Concrete Barriers
 - 1.4.2.10.2. Metal Beam Guard Fence
 - 1.4.2.10.3. Crash Attenuators
- 1.4.2.11. Signals and Illumination
 - 1.4.2.11.1. Roadway Illumination
 - 1.4.2.11.2. High Mast Illumination

1. 5. Construction (Continued) (for Each Segment)

- 1.4.2.11.3. Electrical Services
- 1.4.2.11.4. Traffic Signals
- 1.4.2.12. ITS
 - 1.4.2.12.1. Duct Bank System
 - 1.4.2.12.2. Equipment Foundations
 - 1.4.2.12.3. Support Structures and Equipment

- 1.4.2.13. Permanent Signing and Marking
 - 1.4.2.13.1. Overhead Signs
 - 1.4.2.13.2. Small and Large Signs
 - 1.4.2.13.3. Pavement Markings
- 1.4.2.14. Environmental Mitigation
 - 1.4.2.14.1. Noise Walls
 - 1.4.2.14.2. Wetland and Habitat Mitigation
- 1.4.2.15. Hazardous Materials
 - 1.4.2.15.1. Site Assessments
 - 1.4.2.15.2. Remediation